



LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA23 | Balsall Common and Hampton-in-Arden
Operational assessment (SV-004-023)
Sound, noise and vibration

November 2013

ES 3.5.2.23.12

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Appendix SV-004-023

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Operation assessment	004
Community forum area:	Balsall Common to Hampton-in-Arden	023

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1 Introduction

1.1 Structure of the sound, noise and vibration appendices

1.1.1 The sound, noise and vibration appendices comprise four sections. The first of these details the methodology used (Appendix SV-001-000) and relates to the sound, noise and vibration assessment for all community forum areas (CFA).

1.1.2 For the Balsall Common to Hampton-in-Arden community forum area (CFA23), the other three sections are as follows:

- baseline sound, noise and vibration (Appendix SV-002-023);
- construction sound, noise and vibration (Appendix SV-003-023); and
- operational sound, noise and vibration (Appendix SV-004-023) (this appendix).

1.1.3 The outcomes of this assessment are summarised in Volume 2: CFA23 Report, Chapter 11 Sound, Noise and Vibration.

1.1.4 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5 sound, noise and vibration map book.

1.1.5 This appendix presents the likely noise and vibration impacts, effects and significant effects arising from the operation of the Proposed Scheme for the Balsall Common to Hampton-in-Arden area on:

- people, primarily where they live ('residential receptors') in terms a) individual dwellings and b) on a wider community basis, including any shared community spaces; and
- community facilities such as schools, hospitals, places of worship, and also commercial properties such as offices and hotels, collectively described as 'non-residential receptors' and 'quiet areas'.

1.1.6 The assessment of likely impacts, effects and significant effects from operational noise and vibration on agricultural, community, ecological or heritage receptors and the assessment of tranquillity are presented in the following documents within Volume 5:

• Agriculture, forestry and soils	Appendix AG-001-023
• Community	Appendix CM-001-023
• Ecology	Appendix EC-005-004
• Heritage	Appendix CH-003-023
• Landscape and Visual	Appendix LV-001-023

1.2 Evaluation of impacts and effects

1.2.1 This appendix provides a quantitative assessment of operational noise and vibration impacts and effects and a qualitative assessment of likely significant effects, based on the impacts and effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.

- 1.2.2 Indirect effects arising from permanent changes in traffic patterns on the existing road and rail networks as a consequence of the Proposed Scheme are also reported in this appendix, where they would occur within the study area as defined in Volume 5 Appendix SV-001-000.
- 1.2.3 Route-wide impacts, effects and significant effects associated with noise or vibration from the operation of the Proposed Scheme are reported in Volume 3.
- 1.2.4 Off-route effects of noise or vibration arising from the operation of the Proposed Scheme, including those likely to arise from permanent changes in traffic patterns on roads or railways outside of the study area for direct effects are reported in Volume 4.
- 1.2.5 In undertaking the assessment of sound, noise and vibration, consistent with EIA Regulations and emerging National Planning Practice Guidance¹ a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV001-000.
- 1.2.6 The assessment of impacts has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The Assessment Locations employed in this assessment are presented on map series Sv-02 in the CFA23 Volume 5 sound, noise and vibration map book.

¹ National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk>; refer to the table summarising noise exposure hierarchy

2 Scope, assumptions and limitations

2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1 and in Appendix SV-001-000. As part of the engagement with local authorities through the Planning Forum Sub Group (Acoustics), information regarding any specific local planning guidance in respect of noise and vibration has been requested. Whilst no information has been received for this study area via the Planning Forum Sub Group - Acoustics, the following local policy guidance on noise and vibration has been identified:

- The Solihull Unitary Development Plan - Feb 2006;
- Solihull Draft Local Plan - Sept 2012; and,
- The North Warwickshire Local Plan - July 2006

2.1.2 This guidance has been considered as part of formulating the detailed application of the impact and significance criteria set out in Volume 5, Appendix SV-001-000.

2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners via the Planning Forum Sub Group - Acoustics, is set out in Volume 1, Volume 8.

2.2.2 Engagement with communities has been via the Community Forums, as set out in Volume 1. In respect of sound, noise and vibration the following discussions have taken place:

- general discussions in respect of local issues, including possible ways to avoid and mitigate the potential impacts of noise or vibration
- September / October 2012; a specific presentation about sound, noise and vibration with discussion afterwards with one of the project team specialists;
- November / December 2012; specific request for the Community Forum to propose baseline sound monitoring locations;
- January / February 2013; feedback to the Community Forum on any proposed baseline monitoring locations; and
- verbal / written response to questions on sound, noise and vibration.

2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1), is clarified in a number of areas by the SMR addendum (Volume 5: Appendix CT-001-000/2). Further information is contained in Volume 5: Appendix SV-001-000.

2.4 Assumptions

2.4.1 Route-wide assumptions are outlined in Volume 1, Section 8, and are further detailed in Volume 5: Appendix SV-001-000. Local assumptions that apply to the assessment of operational sound noise and vibration within this CFA are set out in Volume 2: Report 23.

2.5 Local limitations

2.5.1 In this area, there are a number of locations where the land or property owners did not permit baseline sound level monitoring to be undertaken at their premises. However, sufficient information has been obtained to undertake the assessment. Further information is provided in Volume 5: Appendix SV-002-023.

3 Environmental baseline

3.1 Existing baseline

- 3.1.1 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors. The existing and future baseline airborne sound levels derived from these measurements are included within Table 3. Details of the baseline data collection and the methodology are given in Volume 5: Appendix SV-001-000 and specifically for this study area in Volume 5: Appendix SV-002-023.
- 3.1.2 The majority of receptors adjacent to the line of the route are not currently subject to appreciable vibration and therefore vibration at all receptors has been assessed using the absolute vibration criteria as described in Volume 5: Appendix SV-001-000.

3.2 Future baseline

- 3.2.1 The assessment is based upon the predicted change in sound levels that result from the Proposed Scheme. The assessment initially considered a reasonable worst case (that would overestimate the change in levels) by assuming that sound levels would not change from the existing baseline year of 2012/2013. Where significant effects were identified on this basis, the effects have been assessed using the baseline year of 2026 to coincide with the proposed start of passenger services. The future baseline is for the sound environment that would exist in 2026 without the Proposed Scheme.

4 Effects arising during operation

4.1 Introduction

4.1.1 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts and effects are presented. This is followed by the identification of significant effects and the evidence used to support these conclusions.

4.1.2 The structure of this assessment report is:

- Avoidance and mitigation measures
- Quantitative identification of impact and effects
 - Ground-borne sound and vibration
 - Residential
 - Non-residential
 - Airborne sound
 - Residential
 - Non-residential
- Assessment of impacts and effects
 - Residential receptors: direct effects – dwellings
 - Residential receptors: direct effects – communities
 - Residential receptors: indirect effects
 - Non-residential receptors: direct effects
 - Non-residential receptors: indirect effects
 - Cumulative effects from the proposed scheme and other committed development.

4.2 Avoidance and mitigation measures

4.2.1 These are set out in Volume 2: Report 23.

4.3 Quantitative identification of impacts and effects

Ground-borne sound and vibration

4.3.1 Assessment locations defined for the quantitative assessment of impacts are shown on map series SV-02 in the CFA23 Volume 5 sound, noise and vibration map book.

4.3.2 For each Assessment Location, the assessment results for residential and non-residential receptors are presented in Table 1. Explanation of the information in Table 1 is provided in Appendix SV-001-000, with the following additional notes.

B	For non-residential receptors further detail about the type of effect is set out in the text of Volume 5: Appendix SV-001-000.
NA	Type of effect - Generally no adverse effect
A	Type of effect - Adverse effect
S	Type of effect - Significant adverse effect
VDV	Vibration Dose Value
-	The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
^	The impact methodology has identified a potential significant effect at this receptor which based upon further qualitative information is not considered to be a likely significant effect. Please refer the end of this Appendix for further information.
Where the significant effect column is highlighted in pink, then a significant effect is identified at the referenced residential community area, or individual receptor.	
Yellow denotes a low ground-borne noise impact or a minor ground-borne vibration impact	
Orange denotes a medium ground-borne noise impact or a moderate ground-borne vibration impact	
Red denotes a high ground-borne noise impact or a major ground-borne vibration impact	
Dark red denotes a very high ground-borne noise impact	

Table 1: Ground-borne sound and vibration impacts and effects at residential and non-residential receptors

Assessment location		Impact criteria				Significance criteria								Significant effect
		Ground-borne sound level dB L_{pASmax}	VDV m/s ^{1.75} Daytime (07:00 - 23:00)	VDV m/s ^{1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation effect	
ID	Area represented													
172965	Truggist Lane, Berkswell	-	0.08	0.04	-	1	NA	R	T	-	-	-	-	
173192	Truggist Lane, Berkswell	-	0.00	0.00	-	2	NA	R	T	-	-	-	-	-
173225	Truggist Lane, Berkswell	-	0.06	0.03	-	2	NA	R	T	-	-	-	-	
181976	Meriden Road, Hampton-In-Arden	-	0.22	0.11	-	1	A	R	T	-	-	Y	-	~
182461	Kenilworth Road, Hampton-In-Arden	-	0.25	0.12	-	3	A	R	T	-	-	Y	-	~
181976	Patrick Farm Barns, Meriden Road, Hampton-In-Arden (General Commercial)	-	0.22	0.11	-	1	B	G4/V3	T	-	-	-	-	

Impact summary

4.3.3 The operational ground-borne noise and vibration impacts identified in Table 1 are summarised in Table 2.

Table 2: Summary of operational ground-borne noise and vibration impacts

	Number of ground-borne noise impacts			
	Low	Medium	High	Very High
Residential properties	0	0	0	0
Non-residential properties	0		0	
	Number of ground-borne vibration impacts			
	Minor	Moderate	Major	Risk of building damage
Residential properties	4	0	0	0

Airborne sound: direct impacts and effects

4.3.4 The direct effects from the operation of the Proposed Scheme as well as any new, amended or altered roads or railway lines, which are identified as part of the scheme, are presented in Table 3.

4.3.5 The assessment information, impact criteria and significance criteria for the assessment of the incorporated mitigation case at residential and non-residential receptors are presented in Table 3. The results should be considered in conjunction with the information contained in map series Sv-02 in the CFA23 Volume 5 sound, noise and vibration map book.

4.3.6 Explanation of the Table 3 information is provided in Volume 5: Appendix SV001-000, with the following additional notes.



Where the significant effect column is marked, then a significant effect is identified at the referenced group of dwellings, or individual residential or non-residential receptor.

Yellow denotes a minor impact at a residential building – a change is of 3-5 dB

Orange denotes a moderate impact at a residential building – a change is of 5-10 dB

Red denotes a major impact at a residential building – a change is of >10 dB

* Day - $L_{pAeq,07:00-23:00}$

** Night - $L_{pAeq,23:00-07:00}$

*** Max - L_{pAFmax} In the Proposed Scheme only column, two values are presented. The first is the value for the HS2 mitigated train and the second is the value for the TSI compliant train. For further information refer to Volume 5: Appendix SV-001-000.

**** Where the Proposed Scheme modifies an existing source, i.e. road or railway realignments, the *Proposed Scheme only* level in the table includes the sound from the modified source. In this situation the *Do something (Opening year baseline + Year 15 traffic)* level has been corrected so as to not double count the sound associated with the road or railway on its new and existing alignment.

A Adverse effect

B For non-residential receptors further detail about the type of effect is set out in the text of Appendix SV-001-000.

CD Committed Development. The value in brackets in the number of impacts represented column is the value with the committed development.

- G (G1)Theatres, large auditoria and concert halls, (G2) Sound recording and broadcast studios, (G3) Places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls, (G4) Schools, colleges, hospitals, hotels and libraries, and (G5) Offices and general commercial premises
- H High existing ambient sound level. Defined as $>65\text{dB}_{\text{Aeq, day}}$ and/or $>55\text{dB}_{\text{Aeq, night}}$
- L Low existing ambient sound level. Defined as $<42\text{dB}_{\text{Aeq, day}}$ and/or $<32\text{dB}_{\text{Aeq, night}}$
- LD Landscape receptor
- NA Generally no adverse effect
- NI The receptor is predicted to qualify for mitigation, which shall be provided to the specification defined in the Noise Insulation (Railways and other Guided Rail Systems) Regulations 1996
- R Residential
- RM Residential mooring
- S Significant adverse effect
- U Unacceptable adverse effect
- # A change of 3dB or greater has been identified however, the assessment methodology only defines an impact where the absolute sound level from the Proposed Scheme is greater or equal to 50 dB $L_{\text{pAeq, 23:00 - 07:00}}$ during the daytime or 40 dB $L_{\text{pAeq, 07:00 - 23:00}}$ at night. At the receptor denoted the absolute level condition is not met and therefore no impact is identified.
- ~ The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000)..
- \$ A change of 3dB or greater has been identified however, the impact methodology for non-residential receptors includes a screening criteria for G3 building use of 50 dB $L_{\text{pAeq,07:00-23:00}}$, for G4 building use 55 dB $L_{\text{pAeq,07:00-23:00}}$ and 45 dB $L_{\text{pAeq,23:00-07:00}}$, for G5 building use 55 dB $L_{\text{pAeq,07:00-23:00}}$. At the receptor denoted the screening criteria is not met and therefore no impact is identified. Further information is provided in Volume 5: Appendix SV-001-000.
- ^ The impact methodology has either identified an impact at a receptor which based upon further qualitative information does not give rise to a significant effect. Further information is provided at the end of this Appendix.

Table 3: Operational airborne sound level, noise impacts and effects

Assessment Location		Impact criteria												Significance criteria						Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
98826	Old Station Road, Hampton-In-Arden, Solihull	55	48	53/56	59	55	59	60	56	1	0	A	14	R	T	H	-	-	-	
158820	Riddings Hill, Balsall Common, Coventry	45	36	63/66	49	39	42	51	41	1	2	NA	37	R	T	-	-	-	-	
159179	Grovefield Crescent, Balsall Common, Coventry	46	37	63/66	49	39	42	51	41	2	2	NA	62	R	T	-	-	-	-	
160582	Station Road, Balsall Common, Coventry	50	41	71/73	61	47	58	61	48	0	1	A	33	R	T	-	-	-	-	
161143	Marsh Lane, Bradnocks Marsh, Solihull	47	39	59/62	48	49	61	50	49	2	0	NA	3	R	T	-	-	-	-	
161181	Marsh Lane, Bradnocks Marsh, Solihull	55	47	69/72	54	45	48	57	48	3	3	A	5	R	T	-	-	-	-	~
161197	Marsh House Farm Lane, Bradnocks Marsh, Solihull	48	39	59/62	57	56	71	58	56	0	0	NA	1	R	T	H	-	-	-	
161290	Wootton Lane, Balsall Common, Coventry	42	32	54/57	57	45	54	57	45	0	0	NA	1	R	T	-	-	-	-	
161370	Wootton Green Lane, Balsall Common, Coventry	42	33	55/57	51	44	51	52	44	0	0	NA	5	R	T	-	-	-	-	
161426	Holly Acre Lodge, Kenilworth Road, Hampton-In-Arden, Solihull	59	50	72/75	58	51	62	62	54	4	2	A	1	R	T	-	-	-	-	~
161465	Kenilworth Road, Hampton-In-Arden, Solihull	55	46	68/71	72	64	83	73	64	0	0	A	4	R	T	H	-	-	-	

Assessment Location		Impact criteria												Significance criteria						Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
161483	Bibury House, Kenilworth Road, Hampton-In-Arden, Solihull	61	54	75/77	58	52	63	61	54	3	2	A	1	R	T	-	-	-	-	~
161504	Bradnocks Marsh Lane, Hampton-In-Arden, Solihull	45	36	58/61	63	56	71	63	56	0	0	NA	5	R	T	H	-	-	-	
161734	Kenilworth Road, Hampton-In-Arden, Solihull	55	46	70/73	57	52	55	59	53	2	1	A	8	R	T	-	-	-	-	
164673	Wootton Green Lane, Balsall Common, Coventry	43	33	56/59	50	36	50	50	38	1	2	NA	25	R	T	-	-	-	-	
164793	Kenilworth Road, Balsall Common, Coventry	45	36	58/61	64	53	72	64	54	0	0	NA	25	R	T	-	-	-	-	
164857	Kenilworth Road, Balsall Common, Coventry	47	37	61/63	50	36	51	51	40	2	4	NA	23	R	T	-	-	-	-	#
164947	Kenilworth Road, Balsall Common, Coventry	45	36	58/61	46	29	50	49	36	2	8	NA	79	R	T	L	-	-	-	#
167012	Ashley Way, Balsall Common, Coventry	39	30	55/57	46	39	50	47	39	1	1	NA	37	R	T	-	-	-	-	
167652	Wilmot Close, Balsall Common, Coventry	49	40	63/65	51	45	42	53	46	2	1	A	7	R	T	-	-	-	-	
167669	Whitehead Grove, Balsall Common, Coventry	39	30	51/54	46	39	50	47	39	1	1	NA	181	R	T	-	-	-	-	
167728	Top Lodge, Kenilworth Road, Balsall Common, Coventry	53	44	65/68	58	51	62	59	52	1	1	A	1	R	T	-	-	-	-	
167743	Wootton Lane, Balsall Common, Coventry	46	37	59/62	51	44	51	52	44	1	1	NA	3	R	T	-	-	-	-	
167781	Final Home, Park Lane,	55	46	66/69	50	42	48	56	47	6	5	A	1	R	T	-	-	-	-	~

Assessment Location		Impact criteria												Significance criteria						Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Berkswell, Coventry																			
167793	Wootton Green Lane, Balsall Common, Coventry	46	37	59/62	54	49	56	55	49	1	0	NA	1	R	T	-	-	-	-	
167824	Lodge Farm, Kenilworth Road, Balsall Common, Coventry	49	40	61/64	58	51	62	59	52	0	0	A	4	R	T	-	-	-		
167944	Kenilworth Road, Balsall Common, Coventry	48	39	63/66	71	68	83	71	68	0	0	NA	9	R	T	H	-	-		
168004	Lavender Hall Lane, Berkswell, Coventry	59	50	68/71	48	39	48	59	50	11	11	A	4	R	T	-	-	-	~	
168133	Meriden Road, Berkswell, Coventry	44	36	56/59	45	39	54	47	40	2	1	NA	11	R	T	-	-	-	-	
168832	Waste Lane, Balsall Common, Coventry	43	34	58/60	52	42	52	52	43	1	1	NA	46	R	T	-	-	-	-	
170892	Barretts Lane, Balsall Common, Coventry	43	34	58/62	51	37	39	51	39	1	2	NA	13	R	T	-	-	-	-	
171148	Barretts Lane, Balsall Common, Coventry	45	36	57/61	46	38	47	48	40	3	2	NA	1	R	T	-	-	-	#	
171253	Meeting House Lane, Balsall Common, Coventry	41	31	54/58	55	46	68	56	46	0	0	NA	45	R	T	-	-	-	-	
171441	Kelsey Lane, Balsall Common, Coventry	42	33	55/59	52	42	52	52	43	0	1	NA	39	R	T	-	-	-	-	
172124	Meeting House Lane, Balsall Common, Coventry	41	32	56/58	51	37	39	51	38	0	1	NA	22	R	T	-	-	-	-	
172177	Station Road, Balsall Common, Coventry	42	33	58/61	63	51	62	63	51	0	0	NA	8	R	T	-	-	-	-	

Assessment Location		Impact criteria										Significance criteria					Significant effect			
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
172357	Station Road, Balsall Common, Coventry	45	35	59/63	61	47	58	61	47	0	0	NA	25	R	T	-	-	-	-	
172441	Sunnyside Lane, Balsall Common, Coventry	44	35	59/63	51	37	39	52	39	1	2	NA	47	R	T	-	-	-	-	
172667	Sunnyside Lane, Balsall Common, Coventry	42	33	57/59	51	37	39	51	39	1	1	NA	25	R	T	-	-	-	-	
172826	Sunnyside Lane, Balsall Common, Coventry	46	36	60/64	46	38	47	49	40	3	2	NA	16	R	T	-	-	-	#	
172901	Station Road, Balsall Common, Coventry	49	39	70/73	61	47	58	61	48	0	1	NA	7	R	T	-	-	-	-	
172944	Station Road, Balsall Common, Coventry	53	44	74/76	51	48	55	55	50	4	1	A	1	R	T	-	-	-	~	
172965	Truggist Lane, Berkswell, Coventry	61	52	75/80	53	45	52	62	53	9	8	A	1	R	T	-	-	-	OSV23-Co2	
173014	Station Road, Balsall Common, Coventry	43	33	59/62	46	29	50	48	35	2	6	NA	21	R	T	L	-	-	#	
173082	Station Road, Balsall Common, Coventry	45	36	61/64	49	39	42	51	40	1	2	NA	14	R	T	-	-	-	-	
173151	Station Road, Balsall Common, Coventry	52	42	68/71	51	48	55	54	49	3	1	A	2	R	T	-	-	-	~	
173170	Station Road, Balsall Common, Coventry	53	44	77/80	51	48	55	55	50	4	1	A	2	R	T	-	-	-	~	
173192	Truggist Lane, Berkswell, Coventry	66	56	81/85	53	45	52	66	57	13	12	S	2	R	T	-	-	-	NI OSV23-Co2 OSV23-Do3	
173225	Truggist Lane, Berkswell,	62	53	77/81	51	42	49	62	53	11	11	A	2	R	T	-	-	-	OSV23-Co2	

Assessment Location		Impact criteria												Significance criteria						Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Coventry																			
173259	Beverley Close, Balsall Common, Coventry	47	38	62/66	46	38	47	49	41	4	3	NA	13	R	T	-	-	-	-	#
173395	Station Road, Balsall Common, Coventry	54	45	77/79	51	48	55	56	50	4	1	A	6	R	T	-	-	-	-	~
173409	Grovefield Crescent, Balsall Common, Coventry	51	42	65/69	54	45	44	56	47	2	2	A	27	R	T	-	-	-	-	
173544	Lavender Hall Lane, Berkswell, Coventry	46	37	60/63	50	41	51	52	43	1	1	NA	8	R	T	-	-	-	-	
173557	Ram Hall, Baulk Lane, Berkswell, Coventry	54	44	69/71	51	43	50	56	47	4	4	A	1	R	T	-	-	-	-	~
174003	Lavender Hall Lane, Berkswell, Coventry	45	36	58/61	50	41	51	51	42	1	1	NA	18	R	T	-	-	-	-	
174338	Spencers Lane, Berkswell, Coventry	43	34	57/60	44	43	52	47	43	2	1	NA	2	R	T	-	-	-	-	
174501	Watson Way, Balsall Common, Coventry	44	35	59/62	54	50	56	54	50	0	0	NA	30	R	T	-	-	-	-	
174675	Wilmot Close, Balsall Common, Coventry	46	37	61/63	51	45	42	52	46	1	1	NA	8	R	T	-	-	-	-	
174783	Eborne Croft, Balsall Common, Coventry	49	40	61/64	51	45	42	53	46	2	1	A	45	R	T	-	-	-	-	
175211	Bradnocks Marsh Lane, Hampton-In-Arden, Solihull	50	41	63/66	59	52	62	60	52	0	0	A	8	R	T	-	-	-	-	
175336	Turnpike Close, Balsall Common, Coventry	43	34	60/62	46	29	50	48	35	2	6	NA	65	R	T	L	-	-	-	#

Assessment Location		Impact criteria										Significance criteria					Significant effect			
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
175597	Grovefield Crescent, Balsall Common, Coventry	47	37	59/62	51	45	42	52	46	1	1	NA	30	R	T	-	-	-	-	
175827	Lavender Hall Lane, Berkswell, Coventry	43	34	56/59	44	43	52	47	43	2	1	NA	4	R	T	-	-	-	-	
176022	Church Lane, Berkswell, Coventry	45	36	61/64	50	38	47	51	40	1	2	NA	2	R	T	-	-	-	-	
176128	Park Farm, Mercote Hall Lane, Meriden, Coventry	49	40	59/62	45	39	54	49	42	4	3	A	2	R	T	-	-	-	-	~
176243	Pasture Farm, Diddington Lane, Hampton in Arden	62	55	69/72	54	51	57	62	55	7	4	S	1	R	T	-	-	-	NI	OSV23-D06
178468	Diddington Lane, Hampton-In-Arden, Solihull	48	39	62/65	63	51	72	63	52	0	0	NA	11	R	T	-	-	-	-	
178545	Meriden Road, Hampton-In-Arden, Solihull	45	36	60/63	56	45	56	57	46	0	1	NA	13	R	T	-	-	-	-	
178766	Meriden Road, Hampton-In-Arden, Solihull	40	30	54/57	67	59	75	67	59	0	0	NA	22	R	T	H	-	-	-	
179003	Meriden Road, Hampton-In-Arden, Solihull	42	33	56/60	49	44	51	50	44	1	0	NA	21	R	T	-	-	-	-	
179084	Meriden Road, Hampton-In-Arden, Solihull	46	37	61/65	56	45	56	57	46	0	1	NA	10	R	T	-	-	-	-	
179119	The Crescent, Hampton-In-Arden, Solihull	45	35	60/63	50	43	50	51	44	1	1	NA	12	R	T	-	-	-	-	
179384	The Crescent, Hampton-In-Arden, Solihull	42	33	57/60	49	47	60	50	47	1	0	NA	16	R	T	-	-	-	-	
180256	The Crescent, Hampton-In-	42	33	57/60	50	43	50	51	43	1	0	NA	12	R	T	-	-	-	-	

Assessment Location		Impact criteria												Significance criteria						Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Arden, Solihull																			
180470	Nesfield Grove, Hampton-In-Arden, Solihull	46	37	61/64	50	43	50	51	44	2	1	NA	11	R	T	-	-	-	-	
180567	Lapwing Drive, Hampton-In-Arden, Solihull	44	35	59/62	48	40	45	49	41	2	1	NA	38	R	T	-	-	-	-	
180759	Nesfield Grove, Hampton-In-Arden, Solihull	45	35	60/63	51	39	47	52	41	1	2	NA	19	R	T	-	-	-	-	
180945	Old Station Road, Hampton-In-Arden, Solihull	51	43	57/60	57	50	53	58	50	0	0	A	25	R	T	-	-	-	-	
181687	Arden House, Kenilworth Road, Hampton-In-Arden, Solihull	61	52	76/79	57	48	57	61	52	4	3	A	1	R	T	-	-	-	-	~
181780	Diddington Lane, Hampton-In-Arden, Solihull	52	44	65/68	49	43	51	53	46	4	2	A	13	R	T	-	-	-	-	OSV23-Co3
181854	Diddington Lane, Hampton-In-Arden, Solihull	51	43	64/68	49	43	51	52	45	4	2	A	9	R	T	-	-	-	-	OSV23-Co3
181976	Patrick Farm, Meriden Road, Hampton-In-Arden, Solihull	75	66	92/95	42	36	36	75	66	33	30	U	1	R	T	L	-	Y	NI	OSV23-D05
182018	Meridan Mill Farm, Meriden Road, Hampton in Arden	58	49	71/74	42	36	36	58	49	15	13	A	1	R	T	L	-	-	-	~
182073	Diddington Farm, Diddington Lane, Meriden, Coventry	56	48	65/68	53	51	57	56	51	3	1	A	1	R	T	-	-	-	-	~
182139	Mouldings Green Farm, Kenilworth Road, Meriden, Coventry	55	46	70/73	51	46	53	56	49	5	3	A	2	R	T	-	-	-	-	~
182427	Mercote Mill Farm, Kenilworth	54	46	65/68	45	39	54	54	46	9	7	A	1	R	T	-	-	-	-	~

Assessment Location		Impact criteria												Significance criteria						Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
	Road, Hampton-In-Arden, Solihull																			
182461	Marsh Farm and Mercote Cottages , Kenilworth Road, Hampton-In-Arden, Solihull	72	63	86/89	49	44	52	72	63	22	19	S	3	R	T	-	-	-	NI	OSV23-D04
182587	Hornbrook Farm, Cornets End Lane, Meriden, Coventry	55	47	66/69	52	47	55	55	48	3	2	A	2	R	T	-	-	-	-	~
200232	Old Waste Lane, Balsall Common, Coventry	52	43	70/73	45	38	48	52	44	7	5	A	8	R	T	-	-	-	-	OSV18-Co4
202158	Truggist Lane, Berkswell, Coventry	52	42	66/69	47	38	46	53	44	6	6	A	3	R	T	-	-	-	-	OSV23-Co2
202319	Hob Lane, Balsall Common, Coventry	41	32	57/60	46	41	49	47	42	1	0	NA	5	R	T	-	-	-	-	
202645	Hob Lane, Balsall Common, Coventry	42	33	59/61	46	41	49	47	42	2	1	NA	11	R	T	-	-	-	-	
203030	Old Waste Lane, Balsall Common, Coventry	50	41	67/70	45	38	48	51	42	6	4	A	8	R	T	-	-	-	-	OSV18-Co4
203125	Old Waste Lane, Balsall Common, Coventry	47	38	62/65	45	38	48	49	41	4	3	NA	9	R	T	-	-	-	-	#
203260	Spencers Lane, Berkswell, Coventry	44	35	57/60	67	51	68	67	51	0	0	NA	14	R	T	H	-	-	-	
203285	Spencers Lane, Berkswell, Coventry	43	34	57/60	46	37	45	47	39	2	2	NA	3	R	T	-	-	-	-	
203382	Truggist Lane, Berkswell, Coventry	48	39	63/66	51	45	53	53	46	2	1	NA	2	R	T	-	-	-	-	

Assessment Location			Impact criteria										Significance criteria						Significant effect	
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
203420	Truggist Lane, Berkswell, Coventry	50	41	65/68	51	45	53	53	46	2	1	A	4	R	T	-	-	-	-	
203453	Truggist Lane, Berkswell, Coventry	60	51	79/82	51	42	49	61	52	10	10	S	2	R	T	-	-	-	NI OSV23-Co2 OSV23-Do2	
203499	Truggist Lane, Berkswell, Coventry	46	37	61/64	52	44	54	53	45	1	1	NA	2	R	T	-	-	-		
203578	Hodgetts Lane, Berkswell, Coventry	49	40	65/68	46	37	45	50	41	5	4	A	2	R	T	-	-	-	OSV23-Co1	
203600	Hodgetts Lane, Berkswell, Coventry	51	42	66/69	46	37	45	52	43	6	6	A	1	R	T	-	-	-	OSV23-Co1	
203611	Hodgetts Lane, Berkswell, Coventry	52	44	65/69	46	37	45	53	44	7	7	A	6	R	T	-	-	-	OSV23-Co1	
203706	Hodgetts Lane, Berkswell, Coventry	52	43	68/71	46	37	45	53	44	8	7	A	1	R	T	-	-	-	OSV23-Co1	
203737	Hodgetts Lane, Berkswell, Coventry	53	44	65/68	46	37	45	54	45	8	8	A	2	R	T	-	-	-	OSV23-Co1	
203770	Hodgetts Lane, Berkswell, Coventry	48	39	63/65	52	44	54	54	45	1	1	NA	8	R	T	-	-	-		
203808	Truggist Lane, Berkswell, Coventry	59	50	78/80	51	45	53	60	51	9	6	S	2	R	T	-	-	-	NI OSV23-Co2 OSV23-Do1	
203998	Baulk Lane, Berkswell, Coventry	46	37	60/63	53	34	49	54	39	1	4	NA	10	R	T	-	-	-	#	
700550	Meeting House Lane, Balsall Common	40	31	55/58	51	37	39	51	38	0	1	NA	8	R	T	-	-	-		
700551	Bayleys Brook, Baulk Lane, Berkswell	59	50	75/77	51	42	49	60	50	9	9	A	1	R	T	-	-	-	OSV23-Co2	

Assessment Location		Impact criteria										Significance criteria					Significant effect			
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
700552	Four Winds, Kenilworth Road, Balsall Common	56	47	68/71	58	51	62	60	53	2	1	A	1	R	T	-	-	-	-	
700554	Berkswell Hall, Berkswell	44	35	59/62	45	39	54	47	40	2	1	NA	16	R	T	-	-	-	-	
700555	Willow Cottage, Kenilworth Road, Balsall Common	58	49	72/75	61	58	67	63	58	2	1	A	5	R	T	H	-	-	-	
700556	Mercote Lodge and Hornbrook Cottage, Kenilworth Road, Balsall Common	59	51	73/76	58	52	63	59	51	1	-2	A	2	R	T	-	-	-	-	
161197	Marsh House Farm, Marsh House Farm Lane, Bradnocks Marsh, (General Commercial)	48	39	59/62	57	56	71	58	56	0	0	B	1	G5	T	-	-	-	-	
161465	Jardinerie Garden Centre, Kenilworth Road, Hampton-In-Arden, (General Commercial)	55	46	68/71	72	64	83	73	64	0	0	B	3	G5	T	H	-	-	\$	
161734	Kenilworth Road, Hampton-In-Arden, (General Commercial)	55	46	70/73	57	52	55	59	53	2	1	B	1	G5	T	-	-	-	-	
164793	Kenilworth Road, Balsall Common, (Restaurant)	45	36	58/61	64	53	72	64	54	0	0	B	1	G5	T	-	-	-	-	
164793	Premier Inn, Kenilworth Road, Balsall Common, (Inn)	45	36	58/61	64	53	72	64	54	0	0	B	1	G5	T	-	-	-	-	
164857	Kenilworth Road, Balsall Common, (Guest House)	47	37	61/63	50	36	51	51	40	2	4	B	1	G4	T	-	-	-	\$	
167012	Balsall Common Vets, Kenilworth Road, Balsall Common, (Veterinary Surgery)	39	30	55/57	46	39	50	47	39	1	1	B	1	G5	T	-	-	-	-	

Assessment Location			Impact criteria										Significance criteria					Significant effect		
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
167012	Balsall Common Dental Practice, Station Road, Balsall Common, (Dental Surgery)	39	30	55/57	46	39	50	47	39	1	1	B	1	G4	T	-	-	-	-	
167012	Kenilworth Road, Balsall Common, (General Commercial)	39	30	55/57	46	39	50	47	39	1	1	B	1	G5	T	-	-	-	-	
167669	Kenilworth Road, Balsall Common, (General Commercial)	39	30	51/54	46	39	50	47	39	1	1	B	3	G5	T	-	-	-	-	
167669	Oaktrees Day Care Centre, Gorton Croft, Balsall Common, (Day Care)	39	30	51/54	46	39	50	47	39	1	1	B	1	G4	T	-	-	-	-	
167944	Berkswell Service Station, Kenilworth Road, Balsall Common, (Car Dealer)	48	39	63/66	71	68	83	71	68	0	0	B	2	G5	T	H	-	-	-	
172124	Meeting House Lane, Balsall Common, (Shopping)	41	32	56/58	51	37	39	51	38	0	1	B	1	G5	T	-	-	-	-	
172357	Balsall Common Methodist Church, Station Road, Balsall Common, (Church)	45	35	59/63	61	47	58	61	47	0	0	B	1	G3	T	-	-	-	-	
173014	Station Road, Balsall Common, (Club)	43	33	59/62	46	29	50	48	35	2	6	B	1	G5	T	L	-	-	\$	
173014	Station Road, Balsall Common, (General Commercial)	43	33	59/62	46	29	50	48	35	2	6	B	2	G5	T	L	-	-	\$	
173014	Station Road, Balsall Common, (General Commercial)	43	33	59/62	46	29	50	48	35	2	6	B	2	G5	T	L	-	-	\$	
173014	Station Road, Balsall Common, (General Commercial)	43	33	59/62	46	29	50	48	35	2	6	B	1	G5	T	L	-	-	\$	

Assessment Location		Impact criteria												Significance criteria						Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
173014	Kenilworth Road, Balsall Common, (General Commercial)	43	33	59/62	46	29	50	48	35	2	6	B	1	G5	T	L	-	-	\$	
173014	Kenilworth Road, Balsall Common, (Car Dealer)	43	33	59/62	46	29	50	48	35	2	6	B	1	G5	T	L	-	-	\$	
173014	Kenilworth Road, Balsall Common, (Bank)	43	33	59/62	46	29	50	48	35	2	6	B	1	G5	T	L	-	-	\$	
173014	Station Road, Balsall Common, (Bank)	43	33	59/62	46	29	50	48	35	2	6	B	1	G5	T	L	-	-	\$	
174003	Church Lane, Berkswell, (Shopping)	45	36	58/61	50	41	51	51	42	1	1	B	1	G5	T	-	-	-	-	
174003	Berkswell Museum, Church Lane, Berkswell, (Museum)	45	36	58/61	50	41	51	51	42	1	1	B	1	G3	T	-	-	-	-	
175336	Haigs Hotel, Kenilworth Road, Balsall Common, (Hotel)	43	34	60/62	46	29	50	48	35	2	6	B	3	G4	T	L	-	-	\$	
175336	Balsall Common Library, Kenilworth Road, Balsall Common, (Library)	43	34	60/62	46	29	50	48	35	2	6	B	1	G4	T	L	-	-	\$	
176022	Berkswell C of E Primary School, Church Lane, Berkswell, (Primary School)	45	36	61/64	50	38	47	51	40	1	2	B	1	G4	T	-	-	-	-	
176022	St. John the Baptist Church, Berkswell, (Church)	45	36	61/64	50	38	47	51	40	1	2	B	1	G3	T	-	-	-	-	
181976	Patricks Farm Barns, Meriden Road, Hampton-In-Arden, (General Commercial)	75	66	92/95	42	36	36	75	66	33	30	B	9	G5	T	L	-	-	^	

Assessment Location		Impact criteria												Significance criteria						Significant effect
ID	Area represented	Proposed Scheme only (Year 15 traffic)			Do nothing (Opening year baseline)			Do something (Opening year baseline + Year 15 traffic) ****		Change		Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
		Day *	Night **	Max ***	Day *	Night **	Max ***	Day *	Night **	Day *	Night **									
182018	Meriden Mill Farm, Kenilworth Road, Meriden (Garden Centre)	58	49	71/74	42	36	36	58	49	15	13	B	1	G5	T	L	-	-	-	^
182073	Diddington Farm, Diddington Lane, Meriden (General Commercial)	54	48	65/68	53	51	57	57	51	3	1	B	1	G5	T	-	-	-	-	\$
182120	The Island Project School, Diddington Lane, Meriden, (School)	52	46	64/69	53	50	56	56	51	2	1	B	1	G4	T	-	-	-	-	
182139	Mouldings Green, Kenilworth Road (General Commercial)	53	44	70/73	51	46	53	55	48	4	2	B	5	G5	T	-	-	-	-	\$
182139	Barfords, Kenilworth Road, Meriden (Office)	53	46	70/73	51	46	53	55	49	4	3	B	1	G5	T	-	-	-	-	\$
182587	Cornets End Lane, Meriden, (General Commercial)	55	47	66/69	52	47	55	55	48	3	2	B	1	G5	T	-	-	-	-	^
700550	Woodland House, Meeting House Lane, Balsall Common, (Surgery)	40	31	55/58	51	37	39	51	38	0	1	B	1	G4	T	-	-	-	-	

Direct impact - Summary

4.3.7 The operational airborne noise impacts identified in Table 3 are summarised in Table 4.

Table 4: Summary of operational airborne sound impacts

Receptor	Number of impacts		
	Minor	Moderate	Major
Residential properties	49	38	15
Non-residential properties	2	0	11
Quiet areas	None	None	None

4.4 Assessment of impacts and effects

Residential receptors: direct effects - individual buildings

4.4.1 Taking account of the avoidance and mitigation measures incorporated into the Proposed Scheme, the assessment has identified approximately six residential dwellings, close to the Proposed Scheme, where noise would exceed the daytime trigger threshold set in the Regulations. It is therefore estimated that these buildings are likely to qualify for noise insulation under the Regulations. These dwellings are indicated on Volume 5: Map Book - Sound, noise and vibration, Map series SV-02:

- Wellmont House and Cherry Tree Cottage, Truggist Lane, Berkswell receptor reference 173192 (marked as OSV23-Do3 in Table 3);
- Patrick Farm, Meriden Road, Hampton in Arden receptor reference 181976 (marked as OSV23-Do5 in Table 3). This property is also identified as being likely to qualify for noise insulation as a consequence of construction noise as described earlier in this section; and
- Marsh Farm, Marsh Cottage and Mercote Cottage, Kenilworth Road, Hampton in Arden receptor reference 18461 (marked as OSV23-Do4 in Table 3).

4.4.2 The assessment has identified approximately five additional residential buildings close to the Proposed Scheme where the daytime forecast noise level does not exceed the threshold set in the Regulations but the forecast night-time noise level would exceed the World Health Organization's Interim Target² of 55dB, or the maximum noise level (dependent on the number of train passes) as a train passes exceeds the criterion³. It is estimated that these buildings will also be offered noise insulation as described in the Avoidance and mitigation measures section of Volume 2: Report 23. These buildings are indicated on Volume 5: Map Book - Sound, noise and vibration, Map series SV-02:

- Pasture Farm house, Coventry Road, Bickenhill receptor reference 176243 (marked as

² World Health Organization, Night-time Noise Guidelines for Europe, 2010

³ During the night (2300-0700) a significant effect is also identified where the Proposed Scheme results in a maximum sound level at the façade of a building at or above: 85 dB L_{pAFmax} (where the number of train pass-bys exceeding this value is less than or equal to 20); or 80 dB L_{pAFmax} (where the number of train pass-bys exceeding this value is greater than 20).

OSV23-Do6 in Table 3); and

- Pandora, Beech Lawn, Truggist Hill and Truggist Hill Farm, on Truggist Lane, Berkswell receptor reference 203453 and 203808 (marked as OSV23-Do2 and OSV23-Do1 in Table 3).

4.4.3 The mitigation measures, including noise insulation, will reduce noise inside all dwellings such that it will not reach a level where it would significantly affect residents.

Residential receptors: direct effects –communities

4.4.4 The mitigation measures in this area will avoid airborne noise adverse effects on the majority of receptors, and at the following communities:

- Balsall Common;
- Hampton in Arden (except where indicated in Table 5);
- Berkswell (except where indicated in Table 5); and
- Bradnock's Marsh.

4.4.5 Taking account of the envisaged mitigation, Map Series SV-02 (Volume 5 Map book) shows the long term 40dB⁴ night-time sound level contour from the operation of trains on the Proposed Scheme. The extent of the 40dB night-time sound level contour is equivalent to, or slightly larger than, the 50dB daytime contour⁵. In general, below these levels adverse effects are not expected.

4.4.6 Above 40dB during the night and 50dB during the day the effect of noise is dependent on the baseline sound levels in that area and the change in sound level (magnitude of effect) brought about by the Proposed Scheme. The airborne noise impacts and effects forecast for the operation of the scheme are presented on Map Series SV-02 (Volume 5 Map Book).

4.4.7 The changes in noise levels are likely to affect the acoustic character of the area such that there is a perceived change in the quality of life and are considered to be significant when assessed on a community basis⁶ taking account of the local context.

4.4.8 Four isolated properties within the area have been identified as being subject to an observed adverse vibration effect; these effects are likely to be considered as an effect on the acoustic character of the area such that there is a perceived change in the quality of life. However, as the affected properties are spatially remote from larger defined residential areas, are subject to smaller magnitudes of vibration effect, or are small in number, the effects are not considered to be significant.

⁴ Defined as the equivalent continuous sound level from 23:00 to 07:00 or $L_{pAeq,night}$)

⁵ With the train flows described in the assumptions section of this CFA Report, the daytime sound level (defined as the equivalent continuous sound level from 07:00 to 23:00 or $L_{pAeq,day}$) from the Proposed Scheme would be approximately 10dB higher than the night-time sound level. The 40dB contour therefore indicates the distance from the Proposed Scheme at which the daytime sound level would be 50dB.

⁶ Further information is contained in Volume 1.

4.4.9 Approximately 35 isolated properties within the area have been identified as being subject to an observed adverse noise effect; these effects are likely to be considered as an effect on the acoustic character of the area such that there is a perceived change in the quality of life. However, as the affected properties are spatially remote from larger defined residential areas, are subject to smaller magnitudes of noise effect, or are small in number, the effects are not considered to be significant.

4.4.10 In this study area, the direct adverse effects⁷ on the areas of the residential communities identified in Table 5 are considered to be significant.

Table 5: Direct adverse effects on residential communities and shared open areas that are considered significant on a community basis

Significant effect number (see Map series SV-02, Table 1 and 3)	Source of significant effect	Time of day	Location and details
OSV23-Co1/OSV18-Co4 ⁸	Airborne noise increase from new train services	Daytime and night-time	Beechwood ⁸ : Approximately 50 dwellings in the vicinity of Waste Lane, Old Waste Lane and Hodgett's Lane Beechwood that are closest to the Proposed Scheme and their shared external community open spaces. Forecast increases in sound from the railway are likely to cause a moderate adverse effect on the acoustic character of the area around the closest properties, reducing to a minor effect at those further from the Proposed Scheme.
OSV23-Co3	Airborne noise increase from new train services	Daytime and night-time	Berkswell. Approximately 15 dwellings in the vicinity of Truggist Lane and Baulk Lane, that are closest to the Proposed Scheme and their shared external community spaces. Forecast increases in sound from the railway are likely to cause a major or moderate adverse effect on the acoustic character of the area around the properties, dependent on the proximity to the Proposed Scheme.
OSV23-Co3	Airborne noise increase from new train services	Daytime and night-time	Hampton in Arden. Approximately 25 dwellings closest to the Proposed Scheme on Diddington Lane and their associated shared community spaces. Forecast increases in sound from the railway are likely to cause a minor adverse effect on the acoustic character of the area.

Residential receptors: indirect effects

4.4.11 The transport assessment presented in Volume 5: Appendix TR-001-000, has been used to identify those roads or railways within this study area where the alignment remains as at present, but a change in flow or composition is identified which is greater than the screening criteria defined in Volume 5: Appendix SV-001-000. No roads or railways which exceed the criteria defined in Volume 5: Appendix SV-001-000 have been identified in this study area.

⁷ Information is provided in the emerging National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk>.

⁸ Effects on properties in Beechwood are also described in Volume 2: CFA report number 18 as the community area described herein straddles the CFA boundary.

4.4.12 The assessment of operational noise and vibration indicates that significant indirect effects on residential receptors are unlikely to occur in this area.

Non-residential receptors: direct effects

4.4.13 The assessment has identified airborne noise impacts at Patrick Farm, Meridan Mill Farm and Cornets End Lane, represented by receptor references 181976, 182018 and 182587.

Patrick Farm

4.4.14 A major impact has been identified based upon the change in the airborne noise level outside this receptor, reference 181976. An assessment has been undertaken to determine if this impact would result in a likely significant observed adverse noise effect at this non-residential receptor, using the significance criteria detailed in Volume 5: Appendix 001-000.

4.4.15 The residential area of the farm has been considered within the residential assessment. The commercial area of this receptor is made up of farm / industrial buildings whose operation is not considered to be noise sensitive, and therefore the non-residential part of Patrick Farm is not identified as being subject to a significant observed adverse noise effect.

Meridan Mill Farm

4.4.16 A major impact has been identified based upon the change in the airborne noise level outside this receptor, reference 182018. An assessment has been undertaken to determine if this impact would result in a likely significant observed adverse noise effect at this non-residential receptor, using the significance criteria detailed in Volume 5: Appendix 001-000.

4.4.17 Meridan Mill Farm is a garden centre located 450 m from the route. The building is a brick construction, with single glazed windows and pitched roof with tiles. Ventilation is assumed to be provided by opening the windows. The main function of the receptor is located either outside or within lightweight structures, and it is not considered to be noise sensitive. The incident sound levels from the Proposed Scheme within the building are not likely to result in activity disturbance and therefore, the impact at this non-residential receptor is not considered to be significant.

Cornets End Lane

4.4.18 A moderate impact has been identified based upon the change in the airborne noise level outside this receptor, reference 182587. An assessment has been undertaken to determine if this impact would result in a likely significant observed adverse noise effect at this non-residential receptor, using the significance criteria detailed in Volume 5: Appendix 001-000.

4.4.19 The residential area of the farm has been considered within the residential assessment. The commercial area of this receptor is made up of farm / industrial buildings whose operation is not considered to be noise sensitive, and therefore the non-residential part of the farm is not identified as being subject to a significant observed adverse noise effect.

Summary

4.4.20 The assessment of operational noise and vibration indicates that significant direct effects on non-residential receptors are unlikely to occur in this area.

Non-residential receptors: indirect effects

4.4.21 The transport assessment presented in Volume 5: Appendix TR-001-000, has been used to identify those roads or railways within this study area where the alignment remains as at present, but a change in flow or composition is identified which is greater than the screening criteria defined in Volume 5: Appendix SV-001-000. No roads or railways which exceed the criteria defined in Volume 5: Appendix SV-001-000 have been identified in this study area.

4.4.22 The assessment of operational noise and vibration indicates that significant indirect effects are unlikely to occur on non-residential receptors in this area.

Cumulative effects

4.4.23 Details of properties being currently developed which were afforded planning approval before the safeguarding date are presented in Volume 5: Appendix CToo4-000. Within this area, the operational sound, noise or vibration associated with these developments in conjunction with the operation of the Proposed Scheme do not result in any significant cumulative effects.